



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/757,393 | 01/15/2004 | Ji-hyuk Lim | 249/440 | 4955 |

7590 01/10/2006

LEE & STERBA, P.C.
Suite 2000
1101 Wilson Boulevard
Arlington, VA 22209

| |
|----------|
| EXAMINER |
|----------|

DO, AN H

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2853

DATE MAILED: 01/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/757,393

Applicant(s)

LIM ET AL.

Examiner

An H. Do

Art Unit

2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>see 1449s</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statements (IDS) submitted on 15 January 2004, 29 June 2004, and 01 April 2005 were filed and are being considered by the examiner.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 4, 5 and 7-10 and are rejected under 35 U.S.C. 102(b) as being anticipated by Silverbrook (US 6,019,457).

Silverbrook discloses in Figures 9-12 and 17 the following claimed features:

Regarding claims 1 and 4, an ink-jet printhead (17), comprising: an ink chamber (nozzle cavity 112) to be filled with ink to be ejected; a manifold (Figure 17, ink 106 from lower section), which supplies ink to the ink chamber (5); an ink channel (114), which provides communication between the ink chamber (112) and the manifold (Figure 17, ink 106 from lower section); a nozzle (111) through which ink is ejected from the ink chamber (112); first and second heaters (Figure 10, heaters 121, 122), which heat ink in the ink chamber (112) to generate bubbles (Figure 17); and a conductor (contacts 123) ,

which is electrically connected to the first and second heaters (121, 122) and applies a current to the first and second heaters, wherein the first and second heaters are positioned symmetrically around a center of the nozzle (111), and one of the first and second heaters is positioned adjacent to the ink channel (see Figure 17).

Regarding claims 2 and 5, wherein a material used to form the first and second heaters is the same and a size of the first and second heaters is the same so the first and second heaters have a same resistance value (Figure 10 shows the two heating elements are the same sizes).

Regarding claim 7, wherein the first and second heaters (121, 122) are electrically connected in parallel (see Figures 10 and 17).

Regarding claim 8, wherein the first and second heaters (121, 122) are electrically connected in series (see Figures 10 and 17).

Regarding claim 9, wherein the nozzle plate includes a first passivation layer (132), a second passivation layer (134), and a third passivation layer (136), which are sequentially stacked on the substrate (130); the first and second heaters (121, 122) are formed between the first passivation layer (132) and the second passivation layer (134); and the conductor (contacts 123) is formed between the second passivation layer (134) and the third passivation layer (136).

Regarding claim 10, wherein the nozzle plate further includes a heat dissipating layer (thermal shunt 140), which is stacked on the third passivation layer (136) and dissipates heat generated by the first and second heaters and heat remaining around the first and second heaters (column 8, lines 41-45).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silverbrook (US 6,019,457) in view of Anderson et al (US 6,676,246).

Silverbrook discloses the claimed invention except for reciting the first and second heaters are formed of a resistance heating material selected from the group consisting of impurity-doped polycrystalline silicon, a tantalum-aluminum alloy, titanium nitride (TiN), and tungsten silicide (WSi).

Anderson et al teach that the first and second heaters are formed of a resistance heating material selected from the group consisting of impurity-doped polycrystalline silicon, a tantalum-aluminum alloy, titanium nitride (TiN), and tungsten silicide (WSi) (column 3, lines 60-65).

It would have been further obvious to one having ordinary skill in the art at the time the invention was made to have the first and second heaters formed of a resistance heating material selected from the group consisting of impurity-doped polycrystalline silicon, a tantalum-aluminum alloy, titanium nitride (TiN), and tungsten silicide (WSi), as taught by Anderson et al into Silverbrook, for the purpose of obtaining low pulse times and improved printer performance (column 2, lines 51-56).


Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An H. Do whose telephone number is 571-272-2143. The examiner can normally be reached on Monday-Friday (Flexible).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AD
January 8, 2006


An H. Do
Examiner
Art Unit 2853